

Claims

1. A support structure or sleeve, for the use in a machine tool, of the type comprising a tubular body which is able to be associated with a carriage and on which a spindle is mounted, comprising:

a first casing (10), which is made of rigid material, and a layer in contact with at least a part of the internal surface of said first casing (10), which consists of an agglomerate (40) formed by means of hardening of a mixture consisting of a granulate of stone and/or ceramic and/or expanded clay material and a resin of the hardening type, the said layer of agglomerate forming the cavity housing said spindle.

2. Support structure according to Claim 1, wherein said layer of agglomerate (40) is made so as to fill at least partially an interspace (30) defined both by said first casing (10) and by a second tubular casing (20) having the same axis and housed inside the first casing (10), so that the resultant structure consists of a single piece.

3. Support structure according to Claim 2, further comprising, inside said interspace (30), means for connecting together the internal surface of the first casing (10) and the external surface of the second casing (20).

4. Support structure according to Claim 3, wherein said connection means consist of ring elements (23) which are rigidly fixed to the said surface of the first casing (10) and the second casing (20), said ring elements (23) having a height (H) which is equal to the thickness of said interspace (30).

5. Support structure according to Claim 4, wherein each of said ring elements (23) surrounds a coaxial hole (22) having a diameter (D_1) not greater than its own diameter (D_2), said holes (22) being provided at least in the surface of the second casing (20).

6. Support structure according to Claim 2, wherein the internal surface of the said first casing (10) and/or the external surface of the said second casing (20) are roughened, for example, sandblasted, in order to favour fixing of the layer of agglomerate.

7. Support structure according to Claim 2, wherein the internal surface of the said first casing (10) and/or the external surface of the said second casing (20) are

provided with means, such as for example ribs parallel and/or perpendicular to the axis of the said structure, in order to favour gripping of the agglomerate.

8. Support structure according to Claim 1, wherein said first casing (10) is made of sheet steel.

9. Support structure according to Claim 2, wherein said second casing (20) is made of sheet steel.

10. Support structure according to Claim 9, wherein the sheet steel from which the said second casing (20) is made is thinner than the sheet steel from which the said first casing (10) is made.

11. Support structure according to Claim 2, wherein said second casing (20) is made of moulded plastic material.

12. Support structure according to Claim 1, further comprising pipes (32, 34) for circulation of a cooling fluid embedded in the said layer of agglomerate (40).

13. Method for manufacturing a spindle support structure or sleeve of a machine tool comprising the steps of:

- preparation of a first tubular casing (10) made of a material having a high modulus of elasticity and having one end (50) able to allow the insertion and fixing of at least one spindle;

- preparation of a second rigid tubular casing (20) having cross-sectional dimensions smaller than those of the said first casing (10);

- insertion of the said second casing (20) inside the said first casing (10) and along the same axis so as to create an interspace (30) between the said two casings (10, 20);

- preparation of a mixture consisting of at least one granulate of stone and/or ceramic and/or expanded clay material and a synthetic resin of the hardening type;

- casting of the said mixture so as to fill the said interspace (30) by a predetermined amount;

- compaction by means of application of a vibratory movement to the structure thus formed;

- hardening of the said resin so as to obtain a single piece structure formed at least by the first tubular casing (10) and by the layer of agglomerate (40) which is in contact

therewith.

14. Method according to Claim 13, wherein said first tubular casing (10) is made from sheet steel and the said second rigid tubular casing (20) consists of thinner sheet metal and in that means for connecting together the internal surface of the said first tubular casing (10) and the external surface of the said second rigid tubular casing (20) are provided in the said interspace (30).

15. Method according to Claim 14, wherein said connection means are ring elements (23) which are arranged between said first and second casings (10) and (20) and are rigidly joined to the adjacent surface of at least one of said casings (10, 20), said ring elements (23) having a height equal to the thickness of said interspace (30).

16. Method according to Claim 13, further comprising a preliminary step during which at least one of the surfaces of the said casings (10, 20) which delimit said interspace (30) is roughened.

17. Method according to Claim 16, wherein said preliminary step consists in sandblasting the surface of at least one of the said casings (10, 20).

18. Method according to Claim 13, further comprising pipes (32,34) for circulation of a cooling fluid provided in said interspace (30) before the step for casting said mixture.